AMENDMENT(S) TO THE SPECIFICATION

Please add a paragraph beginning at page 1, line 3.

CROSS-REFERENCE TO RELATED APPLICATIONS

This is a U.S. national stage application of PCT/DE03/01175 filed 10 April 2003, which PCT application claims priority of German application number 102 15 929.7 filed 11 April 2002. The PCT International application was published in the German language.

Please replace the paragraph beginning at page 1, line 4, with the following rewritten paragraph:

The present invention relates to antifriction bearings equipped with sensors, which are used in an extremely wide range of applications in order to measure the force acting on the antifriction bearings and the temperature

Please replace the paragraph beginning at page 1, line 10, with the following rewritten paragraph:

Antifriction bearings equipped with sensors have the task of measuring the operating conditions present on the antifriction bearing, in order to then [[to]] be able to control or regulate the overall process of the machine arrangement by using this measured data. In this case, antifriction bearings equipped with sensors are used for force measurement, measurement of the direction of rotation, rotational speed measurement and temperature measurement. Such antifriction bearings equipped with sensors are also disclosed, inter alia, ~~by US~~ in U.S. Patent 5,952,587. The use of strain gage sensors, for example, and the evaluation of these measured results are extensively described in the text. The problem with the unit disclosed in this text is that, for antifriction bearings having a different number of antifriction elements, a different number of cables have to be led from the antifriction bearing to the evaluation unit located outside. The problem is therefore that the evaluation unit has to be designed differently, depending on the antifriction elements currently used in the antifriction bearings.

Please replace the paragraph beginning at page 2, line 11, with the following rewritten paragraph:

This object is achieved by the features in the ~~characterizing part of claim 1.~~ invention. An antifriction bearing is equipped with sensors for measuring the length change in the rolling contact between antifriction elements and the outer ring. Region vectors are formed and pass via an interface to an evaluation unit disposed outside the antifriction bearing which add region vectors from the sensors in at least three regions and determines magnitude and direction of force on the bearing.

Please replace the paragraph beginning at page 2, line 13, with the following rewritten paragraph:

~~The essential core of the invention is that~~ The invention comprises introducing a standardized interface ~~is introduced~~ between the antifriction bearing and the evaluation unit. This standardized interface makes it possible always to provide the same information at the interface, irrespective of the number of antifriction elements in the antifriction bearing. This is achieved by the antifriction bearing being subdivided, for example, into three ~~(claim 2)~~ regions, each covering 120°. All the sensors which lie within a ~~120 degree~~ subdivided, e.g. 120 degree, region are evaluated by ~~means of~~ an ASIC disposed on the antifriction bearing, so that the result is a force vector in this region. In this case, a region ASIC carries out a vector addition of the individual vectors which are determined by the sensors, in order to form an overall vector. The force vectors from the three region ASICs are therefore continuously present at the interface between the antifriction bearing and the evaluation unit. Each of the three ASICs therefore transmits an item of information which contains the magnitude of the force and the direction of the force in the respective region. In the evaluation unit, these three region vectors are then added vectorially and a vector which corresponds to the total loading of the antifriction bearing is thus determined.

Please replace the paragraph beginning at page 3, line 9, with the following rewritten paragraph:

~~According to claim 3, the~~ The antifriction bearing [[is]] may be divided up into [[4]] four regions of 90 degrees each. The difference as compared with ~~claim 2~~ the three region embodiment is that here [[4]] four region ASICs are used, which determine the force vector (magnitude and direction). Otherwise, the further procedure corresponds to ~~claim 2~~ that described above.

Please replace the paragraph beginning at page 3, line 16, with the following rewritten paragraph:

The invention is illustrated in ~~a figure~~ Figure 1 showing a side view schematically shows of an antifriction bearing. ~~The side view schematically shows an antifriction bearing comprising the outer ring 1, the inner ring 2 and the antifriction elements 3. Here, 9 antifriction elements are shown in the example. On the outer ring 1, sensors 4, 5 are disposed schematically. The sensors are disposed in a groove in the outer ring. The sensors 4, 5 are disposed in such a way that the sensor spacing corresponds to half the distance between two antifriction elements. In this illustration, the sensor 5 is currently situated directly in rolling contact, while the sensor 4 is situated precisely between two antifriction elements. The sensors 4 and 5 constitute a strain gage half bridge 6, two further sensors, which are used for the temperature compensation of these two sensors 4 and 5, being disposed outside the loading zone of the antifriction bearing. Likewise disposed in the groove in the antifriction bearing is the region ASIC which adds up the results (from three antifriction elements in the drawing) for one region of 120 degrees. The current angular position in the 120 degree region (of the respective strain gage half bridge) is passed on to the region ASIC via the factors c1, c2 and c3 for region 1, and also c4, c5 and c6 for region 2 and c7, c8 and c9 for region 3. c1 to c9 are scalars which correspond to the angular position of the individual sensors in a region. The region ASICs then form the region vector 7, 8, 9 from the measured values. These region vectors (magnitude and direction) 7, 8, 9 are transmitted to the evaluation unit via a defined interface.~~

Please add a paragraph beginning at page 4, line 18:

DESCRIPTION OF A PREFERRED EMBODIMENT

An antifriction bearing incorporating the invention is conventionally comprised of an outer ring 1, an inner ring 2 spaced radially inward of the outer ring and an antifriction elements 3 between the rings. Here, nine antifriction elements are shown in the example. On the outer ring 1, sensors 4, 5 are disposed, which are shown schematically. The sensors are disposed in a groove in the outer ring while groove opens to the annular space between the rings. The sensors 4, 5 are disposed such that the sensor spacing corresponds to half the distance between two adjacent antifriction elements. In this illustration, the sensor 5 is currently situated on the outer ring and through the groove in the outer ring is directly in rolling contact with the antifriction element below the sensor, while the sensor 4 is situated precisely between two antifriction elements. The sensors 4 and 5 together constitutes a strain gage half bridge 6. Two further sensors, which are used for the temperature compensation of the two sensors 4 and 5, are disposed outside the loading zone of the antifriction bearing. Likewise disposed in the groove in the antifriction bearing is the region ASIC which adds up the results (from the three antifriction elements in the drawing of an example, each of the respective strain gage half bridge) for one region of 120 degrees. The current angular position in the 120 degree region is passed on to the region ASIC via the factors c1, c2 and c3 for region 1, and also c4, c5 and c6 for region 2 and c7, c8 and c9 for region 3. c1 to c9 are scalars which correspond to the angular position of the individual sensors in a region. The region ASICs then form the region vector 7, 8, 9 from the measured values. These region vectors (magnitude and direction) 7, 8, 9 are transmitted to the evaluation unit via a defined interface.

Please delete page 5 in its entirety.